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ABSTRACT

This report discusses the effectiveness of current educational efforts in the state of North Carolina, identifies opportunities for new or expanded activity, and recommends a plan of action. The first section discusses the definition of environmental education and reasons why environmental education is needed. The second section discusses three general types of educational programs that: (1) deal with teacher accreditation through such activities as Project Wild and Project Learning Tree; (2) provide assistance to other organizations such as Stream Watch; and (3) present education/information directly to the public. The last section presents recommendations for the four target groups: (1) students in education systems, principally at the elementary and secondary level; (2) governmental officials; (3) members of the business community whose activities are regulated by the Department of Environment, Health and Natural Resources (DEHNR); and (4) the general public. For each recommendation general comments, a schedule for implementation, the key actors, and cost estimates are included. Three charts are attached. (KR)

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FINAL REPORT AND RECOMMENDATIONS

to Secretary Cobey from The Environmental Education Team

March, 1990
North Carolina Department of Environment, Health, and Natural Resources

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SE 052 131

State of North Carolina
Department of Environment, Health, and Natural Resources
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Lynn R. Muchmore
Assistant Secretary
for Natural Resources

March 12, 1990

William W. Cobey, Jr., Secretary
Department of Environment, Health,
and Natural Resources
512 North Salisbury Street
Raleigh, N.C. 27611

Dear Secretary Cobey:

The DEHNR Environmental Education Team has completed its report, and forwards to you its recommendations for action.

I join all DEHNR personnel who worked on this assignment in urging that you give the proposals careful consideration. Some recommendations can be implemented easily, while others will require several years of cooperative effort and a significant amount of new funding. Taken together, they fulfill your mandate to establish environmental education as the top priority of this Department.

The Team's effort, however important, is only the beginning of what must become a transformation in emphasis that reaches from the top management of the organization to its roots at the field level. For success requires that environmental education be more than a discrete program with staff and money. It must be an attitude, a widely shared commitment to the idea that knowledge and understanding among the people is the most effective long term answer to North Carolina's environmental problems. Only when that attitude is established will we begin to seize opportunities for educational service.

The list of contributors to this study extends beyond the Team itself. It includes several dozen enthusiastic DEHNR personnel who volunteered to meet, discuss, write, search the literature, and share their experiences. The Division of Planning and Assessment provided staff support through the tireless efforts of Anne Taylor, whose belief in the importance

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of environmental education inspired us all. Officials in the Department of Public Instruction were cooperative and encouraging, and we owe much to the teachers who responded to our call and helped us to understand what is needed in the classroom.

We are left with the challenge.

Sincerely yours,

Lynn R. Muchmore

LRM:ww

ENVIRONMENTAL EDUCATION TEAM

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INTRODUCTION

During the summer of 1989 William Cobey, Jr., Secretary of the newly organized Department of Health, Environment, and Natural Resources (DEHNR), announced that the highest priority in the Department would be assigned to environmental education. He requested that immediate steps be taken to review the effectiveness of current educational efforts, to identify opportunities for new or expanded activity, and to recommend a plan of action. Thus the Environmental Education Team was formed. Its members focused their own attention and the experience of their professional colleagues through a series of intense discussions, including meetings with schoolteachers and representatives of other organizations with educational objectives. This report is their product.

Why education?

The education imperative is best understood against the Department's draft mission statement. The mission statement is a pointed reminder to 3500 DEHNR employees that the organization exists for a well defined purpose. It guides decisionmakers who harmonize the work of those employees within its divisions, sections, and offices. The mission is:

> To conserve our natural resources, protect our environment, and promote the public health through the voluntary actions of knowledgeable citizens and responsible organizations.

The most important term in the mission statement is "voluntary". The quality of the environment is determined by countless millions of choices made by individuals and organizations in everyday life. Their choices reflect pervasive social, economic, and political values. Those values are a product of education. Respect for the natural environment, followed by responsible action, grows out of knowledge and understanding.

The Department's regulatory functions tend to capture media attention because they are often controversial. Environmental agencies are commonly thought of as regulatory agencies. In a constitutional democracy, however, the coercive powers of the state are limited, and no regulatory initiative that presses these limits can maintain long term political support. Ultimately, protection of the environment depends instead upon the emergence of behavioral norms that discourage pollution while they prize high quality air, water, and soil.

Some have observed that DEHNR is not an education agency, and pass responsibility for environmental education to the local schools and the Department of Public Instruction. The Team agreed that any initiative supplanting the role of those institutions would be inappropriate. However, the Team emphatically rejected all arguments that absolve DEHNR of educational responsibilities and of its obligation to respond to and support teachers by providing instructional materials, training, and consultation on matters of curriculum content. Further, the Team concluded that the need for environmental

education extends beyond the elementary and secondary classroom and into the adult population, where businessmen, public officials, and opinion leaders make decisions that affect the quality of life of all North Carolinians.

What is Environmental Education?

Clear definition of environmental education is an important preliminary. Absent such a definition, any new program initiative will quickly lose focus. The Department publishes and distributes a large volume of information about programs and activities. Most of this material has some educational objective. However, the Team carefully guarded its definition of environmental education to preserve the distinction between information and education.

> Environmental Education is a process that increases awareness, knowledge, and understanding of natural systems -- the interdependence of living things, the impact of human activities -- and results in informed decisions, responsible behavior, and constructive action.

Two aspects of this definition deserve note. First, the definition adopted is results oriented. It implies that unless the process has behavioral consequences it cannot properly be called environmental education. The Team emphasized throughout its deliberations that it viewed education as a means to reduce the conflict between human activities and the quality of the natural environment rather than an end in itself.

Second, environmental education stresses interdependencies. This distinguishes it from traditional science disciplines. Biology and botany, for example, each contributes to

environmental education. Neither is sufficient under the definition set forth above. It is the understanding of interdependencies between biological phenomena and botanical phenomena that distinguishes environmental education. Hence the Team concluded that pressing the Department of Public Instruction for new courses in the elementary or secondary curriculum would be a mistaken strategy. What is required instead is an effort to infuse existing courses in the natural, physical, and social sciences with a new consciousness of important environmental relationships.

The portrayal of environmental education as a series of connectors joining traditional disciplines may suggest that it has no substantive content of its own. This impression should be corrected, since environmental science does cohere around a definite list of topics and rely upon well accepted principles. The subset from that list that is most relevant to the responsibilities of DEHNR and that should serve to focus its educational effort is as follows:

1. Population dynamics
2. Energy/materials flows
3. Competition
4. Succession
5. Hydrologic cycle
6. Meteorological flows
7. Biodiversity
8. Nonrenewable resources

THE NEED

Within the context of the Department's mission, "need" must be recognized in two senses. The most fundamental of these needs is measured by the level of understanding about environmental phenomena among North Carolina citizens. Assuming that is accepted, the Department then needs a strategy to mobilize its own resources so that that level of understanding can be improved.

How much does the public really know about today's environmental problems and issues? Surprisingly, that question does not seem to have attracted a significant amount of attention from researchers nationally, and the Team was able to find no studies peculiar to North Carolina. Since the model applied here assumes that constructive action and responsible behavior are directly related to the quality and extent of public knowledge, a characterization of that knowledge would seem a necessary foundation for sound planning. Such a data base does not exist at the present time.

The most proximate survey was reported by researchers at the University of Kentucky in the 1987 volume of The Journal of Environmental Education. They summarized results: "Using all the items on the state survey, it can also be concluded, as was concluded for the 1980 national sample, that the environmental knowledge of Kentucky residents in 1985 was poor." Despite more

than two decades of high media visibility, intense political debate, and heightened regulatory activity, there is limited evidence that the environmental knowledge base has progressed. The Kentucky survey, along with the few others available, demonstrate that the average citizen has not acquired a sufficient understanding of such issues as waste management or groundwater contamination either to assess major public policy options or to modify private behavior.

The low apparent levels of public knowledge have implications for several departments of state government, but represent a particularly significant impact to DEHNR. Directors of permitting agencies like Solid Waste, Environmental Management, Coastal Management, and Land Resources are quick to emphasize that regulation unaccompanied by public acceptance and understanding presents an impossible dilemma. Grudging compliance translates into a heavy enforcement load, and enforcement drains the resources that would otherwise be available either to explain why regulations are necessary or to continue the public dialogue required to make the regulations more acceptable.

The lack of knowledge contrasts remarkably with the levels of interest and concern. Virtually all of the polling data spanning this subject, including those in North Carolina, reveal that environmental quality is an uppermost concern in the minds of citizens. Seventy six per cent of Americans responding to a Gallup poll last year identified themselves as

"environmentalists," and more than half of those considered themselves "strong environmentalists."

Concern unaccompanied by knowledge translates to apprehension or fear, and fear is a dangerous setting for policy development. Political leaders who must address such issues as nuclear waste disposal and hazardous waste management continue to be frustrated because the rational search for solutions is so often overcome by hysteria. The business community is likewise affected. After analyzing a recent national survey, the president of Opinion Research Corporation observed: "Any company that becomes embroiled in an environmental controversy is likely to be engulfed by a tidal wave of public disapproval and potential consumer action." The disparity between concern and knowledge is apparent in that same survey, which showed that of fifteen steps citizens could take to improve environmental quality only one -- recycling bottles or cans -- is done on a regular basis by as many as four in ten Americans.

When the benefits of increased knowledge about environmental matters is accepted as self-evident, attention turns to the current role of the Department as a large organization with a capacity to aid the educational process. What is DEHNR doing now? Could it be more effective? What should be done to strengthen its contribution?

CURRENT PROGRAMMING

The Team conducted a complete inventory of DEHNR programs whose objectives lie within the general subject of environmental education. Divisions represented most frequently on that list are Soil and Water Conservation, Coastal Management, the Zoological Park, Land Resources, Wildlife Resources, Forest Resources, and Parks and Recreation. The Albemarle-Pamlico Estuarine Study (APES), while not a division, places major emphasis on public information and public involvement and will continue through 1993. Environmental education efforts are totally lacking in only a few of the 19 line divisions, since most publish newsletters or take similar measures to explain program content. Much of this activity, however, falls in the category of public information rather than environmental education. It is narrowly focused, lacks the characteristics of process, is one-directional, and is less concerned with explanations of natural systems than with the specifics of regulation or law.

Education programs in the operating divisions are not easily categorized. However, the three general types discussed below account for most of the substantial activity.

1. Teacher Accreditation. North Carolina teachers must meet continuing education requirements to retain accreditation. The

Wildlife Commission and the Division of Forest Resources conduct workshops that satisfy accreditation requirements.

The most extensive of these workshops involves Project Wild, spearheaded by the Wildlife Resources Commission. Under Project Wild, teachers are given a catalogue of activities, including projects and experiments, that can be incorporated into lesson plans. They receive training that familiarizes them with catalogue content and with the appropriate instructional methods. Commission staff has worked with teachers to crossreference each catalogued activity with elements of the competency-based curriculum established by the Department of Public Instruction for grades K-12. For example, one competency goal for eighth grade science students is "an understanding of adaptation and its significance as a characteristic of life." When planning lessons that achieve that competency, the teacher may consult the crossreference issued by the Wildlife Commission and find a list of some two dozen class activities that are explained in the Project Wild catalogue. The catalogue entry will suggest instructional procedures, describe needed materials, and define the objectives of the activity.

Project Learning Tree resembles Project Wild in its methodology, but emphasizes forest ecology rather than wildlife. It is also keyed to the competency-based curriculum, and is offered through workshops taught by Forest Resources personnel. Beyond Project Learning Tree, the Forest Resources division provides a thirty hour workshop entitled "Investigating Your Environment" that emphasizes the methodology of teaching in the

out-of-doors. Activities center around forest practices, wildlife, water quality, soil science, and land use. This workshop also meets accreditation requirements.

Forest Resources is unique among the DEHNR divisions because it has facilities dedicated solely to environmental education. The five Educational State Forests, each one a woodland tract of from 140 to 800 acres, feature day-use facilities, trails, and interpretive exhibits along with programmed activities conducted by the ranger staff. The Forests have been made available to the Wildlife Resources Commission, the Division of Soil and Water Conservation, and other organizations for educational programs.

An important feature of the accreditation programs is the close connection between workshop content and the practical needs of teachers constrained by a standard curriculum. The competencies to be achieved at each grade level and in each discipline are prescribed in some detail by state issued Teacher Handbooks that totals 7,614 pages. While some teachers treat the competency requirements more flexibly than others, an obligation to honor the Handbooks in the classroom is universally acknowledged. Thus course materials, including student projects, are of limited use to busy teachers unless they are referenced to a specific Teacher Handbook.

2. Assistance to Other Organizations. DEHNR provides a mix of support to other organizations, usually private groups, that are active in conservation and environmental protection. The purpose of this support is seldom environmental education, at least in the strict terms adopted here. It is largely driven by

the desire to establish public support for DEHNR operations, to encourage citizen involvement, or to widen the array of information on topics related to environmental issues.

The best known example is Stream Watch, a program housed in the Division of Water Resources. Local organizations interested in the health of a particular river segment or stream and willing to take action to improve its quality are designated as Stream Watch groups. Each group is provided with a written Guide to Stream Walking and may receive training to show its members how water quality can be observed and measured. Typical activities include streamside cleanup, canoe trail maintenance, and youth outings. Stream Watch groups form a network that can feed information to DEHNR about changes in the state's waterways, information that is valuable for planning and enforcement. Perhaps more importantly, they create an opportunity for citizens to participate in local projects that directly benefit the resource.

Stream Watch is one application of the "adoption" model used to focus community interest. Adopt-a-Park and Adopt-a-Highway are other examples. Both are assisted by state government, although Adopt-a-Highway is an initiative of the North Carolina Department of Transportation and was organized to reduce roadside litter.

A second type of assistance provided by DEHNR to other organizations is the cash grant. The leading example is based in the Sedimentation Pollution Control Act and the Mining Act, both laws enforced by the Division of Land Resources. The cited laws

return to the Division civil penalty monies collected from violators. These monies are deposited to an educational grant fund, and are distributed through a competitive grant process to organizations who apply for project support. Public service television campaigns, workshops, applied research, and manuals explaining sedimentation control practices are examples of successful projects. Expenditures from the grant fund range from $75,000 to $150,000 per year.

A third type of assistance is sponsorship. This approach is best illustrated by the Division of Soil and Water Conservation, which sponsors poster, essay, and speech competition in the elementary schools. Entrants are judged in a tier of contests culminating in a state "finals". Topics are conservation centered, and the number of participants is large. In FY 1989 51,253 students took part in contests sponsored by the Soil and Water Conservation Districts.

3. Direct Education/Information. Teacher accreditation and assistance to other organizations represent indirect activity; that is, action by DEHNR to approach a target audience through intermediaries. The advantage of this approach is its "leverage" or "multiplier" effect. By helping to train one classroom teacher, the Department potentially improves the knowledge and attitude of every student that teacher instructs during coming years. By helping to organize and educate a Stream Watch group, the Department may stimulate interest and involvement by a whole community. But less resources are committed under this strategy than in attempts to reach citizens directly.

Parks and Recreation, Wildlife Commission, Forest Resources, Soil and Water Conservation and the Zoological Park are all divisions whose staff conduct educational programs by interacting with individuals. Some are facilities based, as at parks, the Zoo, and the Educational State Forests. There interpretive tours and lectures are provided to help visitors understand the physical setting. Others include classroom visits, workshops, or seminars that address particular environmental topics. The Wildlife Resources Commission, for example, conducts CATCH clinics for 8-15 year olds, teaching them about fish biology, habitat, and the conservation ethic, then allowing each child to practice fishing skills. In 1989 Commission personnel worked directly with 2,291 children.

Another example of direct interaction occurs each fall at the State Fair, where DEHNR divisions cooperate to build educational exhibits.

Into this category also falls a rich miscellany of "public information" that DEHNR generates in large part on an as-needed basis and principally in response to current issues. Newsletters, brochures, public service announcements, video tapes, magazine articles, and speeches to interested groups are examples that reflect the profusion of public information. The value of this activity may be significant for other reasons, but its importance as a vehicle of environmental education is at this point minimal.

A final activity by DEHNR divisions is training related to regulations or technology. Examples are the Wastewater Treatment

Plant Operators training program, workshops by the Governor's Waste Management Board, and seminars for consulting engineers offered by the Division of Land Resources. With additional funding and a slight change in objective, training programs could be integrated with the environmental education initiative.

Summary and Conclusion. The conviction that public awareness, knowledge, and understanding is vital to a healthy environment and that it will become even more critical in the future is pervasive. Many of the divisions of DEHNR have launched environmental education initiatives, and the accumulation of activity is impressive. A critical review of that accumulation leads to four conclusions:

1. Environmental education helps the Department acquit responsibilities assigned to it by statute and is vital to its stated mission.

2. Environmental education has been concentrated in the conservation and natural resource management programs. The regulatory divisions are notably absent from the Department's effort.

3. Environmental education responsibilities are decentralized. DEHNR as presently configured provides no departmental focus for environmental education efforts and no administrative structure within which to guide it or to give it systematic support.

4. No clear definition of environmental education has been operationalized by the Department. Hence the presence of strategy and thoroughly considered objectives is not

apparent in its environmental education activities. Programs have emerged through the initiative of individuals or in response to outside demands with no deliberate pattern of evolution. While this milieu has produced several outstanding programs, it has left the Department without the aggressive commitment that the environmental education imperative demands.

RECOMMENDATIONS

Introduction. The Environmental Education Team divided into four task forces, and each recommended actions related to a specific audience or "target group." The four target groups are (1) students in education systems, principally at the elementary and secondary level (2) governmental officials (3) members of the business community whose activities are regulated by the Department, and (4) the general public. Team membership on each task force was supplemented with other appointments from among DEHNR personnel who indicated some interest in participation. The task forces functioned independently, and each approached its task differently from others. An array of their supporting documents, including committee reports and memos, is on deposit in the DEHNR environmental resources library. They conclude with the set of recommendations grouped below.

I. **The Department of Environment, Health, and Natural Resources should set an example to other organizations and to individuals by conducting its own operations in accord with a strong conservation ethic and in ways that minimize adverse environmental impact.**

Comments: This recommendation should be carried out by first conducting an environmental audit of all divisions and then

utilizing the findings to educate departmental employees and initiate actions to reduce negative environmental impacts.

Policies and practices reviewed in the audit should include those pertaining to:

--Waste - Examine the amount, types and disposal of waste generated by the Department, and initiate or enhance practices to reduce, recycle or better dispose of this waste.

--Pesticide Use - Examine any practices that involve the use of pesticides, evaluate their negative impact on the environment and recommend more environmentally benign practices.

--Energy - Examine current energy usages, use environmentally safe and sustainable energy sources and improve energy efficiency and conservation.

--Transportation - Examine current transportation practices and implement or encourage more efficient practices.

--Procurement - Identify products whose production or use has a negative impact on the environment and obtain alternative products.

In addition to reviewing current procedures and adopting new practices as a result of audit findings, classes and literature should be provided that explain the philosophy of the Department and that teach employees how to become more efficient and conscientious consumers, both at work and at home.

Schedule: Implementation of this recommendation should be immediate. One year would be required to develop and carry out

the audit. The second year should be devoted to implementation and to employee education. Audit updates and education program review should be made periodically thereafter.

Key Actors: A Department task force should be formed to carry out this recommendation. Divisions with unique operations should conduct their own environmental audit based on guidelines and policy provided by the task force.

Cost Estimate: Resources needed to implement this recommendation would include $5,000 to compile and publish the audit and an estimated $10,000 for employee training.

II. The Department of Environment, Health, and Natural Resources should maintain a strong working relationship with the Department of Public Instruction. Secretary Cobey should meet periodically with the Superintendent of Public Instruction and the Chairman of the State Board of Education to review environmental education opportunities and to offer this Department's assistance.

Comments: Environmental education must be a cooperative venture between the Department and the education system. Both parties must understand the needs and capabilities available, and delivery systems must be designed and implemented to meet the combined needs of the Department and the education system.

A meeting among Secretary Cobey, Superintendent Etheridge and Chairman Haworth should begin a process to establish environmental education as a very visible educational priority.

The three should organize staff resources within the two departments to explore several opportunities identified by the Team. Perhaps the most important of these is the opportunity to develop a cooperative strategy for infusing environmental education into the existing curricula and incorporating scientific principles into teaching methodolgy. DEHNR should offer to assist as appropriate with a review of the curriculum content.

Strengthening curricula and teaching techniques will require greater focus on the environment in preservice and inservice teacher training, and DEHNR should pledge assistance, including internships for teachers and intensified outreach with such established programs as Project Wild and Project Learning Tree. Dialogue with the Department of Public Instruction is likely to be both exciting and productive as leaders of the two departments establish a working relationship that encourages collaboration at all levels of their organizations.

Schedule: Initial contacts should be made immediately to explain the department's desires and introduce the efforts of the Environmental Education Team. When the team's report is finished and accepted it should be shared with state education authorities, and its content should serve as an agenda for initial meetings.

Key Actors: The key actors are Secretary Cobey, Superintendent Etheridge, and Chairman Haworth along with other individuals or organizations they may wish to include.

Cost Estimate: No additional resources would be required to implement this recommendation.

III. **The Department of Environment, Health, and Natural Resources should establish an Office of Environmental Education.**

Comments: This office would function in a manner similar to the existing Office of Public Affairs in that it would provide staff support, organization and coordination while leaving the responsibility for specific programs with the various divisions.

The Office Director would:

--Compile a directory of DEHNR educational resources that can serve as a reference for persons seeking assistance.

--Supervise programming and management of the DEHNR environmental education centers.

--Serve as Department liaison with the Department of Public Instruction to strengthen interdepartmental cooperation and assist those divisions that previously have had no working relationship with the Department of Public Instruction.

--Chair periodic meetings with division education representatives as a means for exchanging ideas, coordinating activities and events and unifying the Department's approach to environmental education.

--Assist with the organization of existing environmental education programs to ensure consistency, prevent duplication of efforts, serve larger audiences, encourage more comprehensive treatment of subject matter, and produce higher quality materials.

--Assist divisions to develop educational materials that meet the objectives and measures of the Department of Public Instruction's "Standard Course of Study".

--Help divisions and schools to identify potential sources of state, federal, corporate, and foundation funding for environmental education.

Schedule: This recommendation should be implemented on July 1, 1990.

Key Actors: Key actors include the Secretary, who has the authority to establish new organizational units in DEHNR, and the Deputy Secretary for Environment and Natural Resources, under whom the Office would logically be located. Division directors should appoint lead personnel to work closely with the Office, creating the network that can be relied upon to carry forward departmental strategy.

Cost Estimate: Initially the Office of Environmental Education should consist of a coordinator with professional training and experience in the field of education and one clerical position to provide data management and secretarial support. Funding needed to implement this recommendation would include:

Coordinator Position	$ 50,000
Clerical Position	$ 25,000
Office Budget	$ 100,000
total	$ 175,000

IV. **The Department of Environment, Health, and Natural Resources should give priority to teacher training as its most**

effective and efficient means to improve the environmental knowledge base of elementary and secondary students.

Comments: The Department should provide leadership to ensure that teacher training at all levels promotes a sound environmental ethic while meeting the needs of the educational system in North Carolina. The Department can provide guidance so that teacher training, and consequently student instruction, incorporates principles of scientific inquiry and encourages higher order cognitive skills like logical reasoning and problem solving. This can be fostered by providing opportunities for interactive participatory learning.

Initial steps to implement this strategy should include needs assessment. It is important to ascertain the statewide teacher needs for training in environmental education. This is true for high school as well as elementary teachers, although there has been more experience with and there is more information about elementary level education. Attention should be paid to defining barriers to teacher training; among them the scarcity of substitute pay, difficulty getting credit or reimbursement for workshops, and time demands that crowd out training opportunities. A group of teachers, representatives of the State Department of Public Instruction, departmental personnel and other interested individuals could be convened to provide input.

DEHNR should provide statewide leadership by working in tandem with the Department of Public Instruction to ensure that teacher training efforts are supported, curriculum objectives are met and barriers to teacher involvement are minimized. Such

coordination should also assist to develop new inservice training by identifying needs and gaps in existing courses. The Department of Public Instruction should facilitate teacher training by certifying that training materials meet curriculum objectives, encouraging support from school superintendents and principals, and removing obstacles to accreditation.

Some divisions within DEHNR are conducting inservice renewal classes for teachers. They could be improved by greater coordination, with more emphasis on information sharing and referrals. Coordination could easily lead toward interdivisional courses for teachers. All DEHNR efforts should be consistent with the Department of Public Instruction's checklist for effective inservice training.

Measures to incorporate environmental education into the preservice training of student teachers should also be pursued. One possibility is the creation of a model preservice program that is piloted and evaluated at an interested university.

Schedule: This recommendation should be the main agenda driving the new DEHNR Office of Environmental Education during its initial year, beginning July 1, 1990. Needs assessment, creation of a resource directory, coordination with the Department of Public Instruction, and informal teamwork involving divisions actively delivering teacher training are important functions that require high-level leadership.

Key Actors: While the initiative must be taken by DEHNR's Office of Environmental Education, teachers, school administrators, and other interested agencies and organizations

should be invited to join with the Department to plan the teacher training programs. The quality of DEHNR's effort will vary directly with the level of participation from outside the agency.

Cost Estimate: Resources committed to this recommendation should be substantial. The Team recommends that teacher training should be a half million dollar program in its first year, with expenditures as follows:

Needs Assessment	$ 20,000
Teacher Training Materials	250,000
Teacher Training Workshops	100,000
Educational grants pool	130,000
total	$500,000

V. **The Department of Environment, Health, and Natural Resources should develop a system of three Environmental Education Centers.**

Comments: Eventually three environmental education centers should be established, one each in the Mountains, the Piedmont, and the Coastal Plain. Cooperation should be sought from the state's education leadership to consider specific sites, facility designs, facility administration, and operation and program development.

Experienced environmental educators agree that well managed and properly sited residential centers would be an extraordinary asset. Beyond the fact that they would symbolize an unprecedented commitment by the state to environmental education, they would provide a powerful experience to teachers and students by capitalizing on the natural fascination that virtually everyone feels for the outdoors. The reinforcement of classroom learning through hands-on applications and real world experience

creates an appetite for knowledge that is difficult to instill when facilities of this kind are not available.

Centers should be programmed for a variety of uses, ranging from service as a retreat facility for environmental and business leaders to summer camps for elementary school students. The team believes that high priority should attach to teacher training and "outdoor laboratory" instruction for students, and that the Centers should be a delivery point for seminars and workshops.

Schedule: Planning for the first Center should begin with the adoption of this report. A small task force should be appointed to outline program options, estimate staffing requirements, consider siting criteria, and propose basic facilities design. The task force should report to the Secretary with a proposal that can be included in the DEHNR capital budget request to the 1991 session of the General Assembly.

Key Actors: The task force should be composed of Department personnel, with one representative each from the State Department of Public Instruction, the elementary education system, and the secondary education system. As sites are selected, local legislators and business and community leaders should also be involved. Leadership of the task force should shift to the director of the DEHNR Office of Environmental Education when that Office becomes operational.

Cost Estimate: Resources needed to bring the first Center on line are estimated as follows:

Task force expenses	$ 10,000
Center site acquisition and facility construction	$3,500,000
Staffing and support (1 year)	350,000

total $3,860,000

VI. **The Department of Environment, Health, and Natural Resources should require each of its line divisions to prepare an environmental education program plan and to submit that plan along with other program plans during the budget preparation process.**

Comments: Notwithstanding the continuing commitment to environmental education in some line divisions, the announcement that environmental education is now a Department priority is unlikely to foster meaningful progress unless that priority status is long term and comprehensive. The Team frowned upon suggestions that a large educational bureaucracy is needed within DEHNR. However, the Department agenda is so vulnerable to crisis that deliberate steps must be taken to prevent quick erosion of the departmental commitment in the face of urgent short term priorities.

An efficient way to insure that attention is given to environmental education on a continuous basis is to compel that attention by use of the budget machinery. By requiring that every line division prepare an environmental education program plan along with other program plans submitted annually or biennially, the Department obligates division directors to address the education need, if only by indicating that they intend to take no action. Over time, the collection of program plans gives senior management a comprehensive view of performance and provides a basis for corrective policy.

Schedule: This measure should take effect in May 1990, so that environmental education plans must be submitted as the budget is prepared for submission to the 1991 session of the General Assembly.

Key Actors: Specific instructions for environmental education program plans should be issued by the Division of Planning and Assessment in cooperation with the Division of Fiscal Management. When those instructions are completed, responsibility shifts to the Assistant Secretaries, who must enforce the integrity of the budget preparation, and to the division directors, who must implement the planning instructions.

Cost Estimate: This recommendation does not require new resources, although some additional load will fall upon those line divisions which do not otherwise incorporate environmental education as a program objective.

VII. **The Department of Environment, Health, and Natural Resources should produce and periodically update a program for general audiences that sets forth key environmental issues. The program should be composed with input from all divisions in consultations with multi-media specialists, and should be made widely available for use by organized groups.**

Comments: The array of educational materials produced by line divisions in DEHNR and available to the general public is remarkable. A list would include magazines, newsletters, slide collections, posters, video tapes, portable displays, handbooks, and radio programs, with printed materials the dominant mode. As

would be expected, such items concentrate around the mission of the originating division, and there has been little support for presentations that transcend organization boundaries.

The Team considered this fact a deficiency. It concluded that the adult public, whose concern about environmental quality is widely documented, would be better equipped to understand critical issues if the Department were to prepare one or more background programs organized around environmental concepts. These should be organized consistent with the list on page 4 above and should reinforce the annual theme established under Recommendation IIX.

The program "package" should be composed with professional assistance by an interdisciplinary group representing the principal line divisions, and should integrate audiovisual and printed material so as to encourage interaction between the audience and the presenter whenever the setting permits. It should be available to civic groups, community colleges, other agencies of government, and to personnel within DEHNR who are invited to speak to organizations.

The Department's Office of Health Education and Communication already has the capacity to produce such packages for public health topics, and the Team believes it most economical to extend that capacity into environmental education.

Schedule: Planning activity should begin immediately, with an announced intent to complete the first project by July 1, 1991.

Key Actors: This activity should proceed under the management and direction of the DEHNR Office of Environmental Education, with organized input from line divisions and production through the Office of Health Education and Communication. Anticipating that the Office of Environmental Education will not be created until July 1, 1990, the Team recommends planning begin immediately through a temporary working group chaired by an Assistant Secretary.

Cost Estimate: Assuming that production is done with DEHNR facilities and staff, costs in the initial year are estimated at $12,000. Costs for contracted production are estimated at $32,000.

IIX. **The Department of Environment, Health, and Natural Resources should adopt an annual theme around which environmental education activities can be organized. The theme should operate on a twelve month year basis, with selection eighteen months in advance.**

Comments: Selecting an environmental education theme each year provides an opportunity to identify emerging issues or to highlight existing issues that deserve greater general public understanding. While the theme should not be viewed as a substitute for established educational activities, its effect will be to involve line divisions beyond the narrow scope of their individual missions and to combine the resources of the Department in a unified approach. All divisions should be

consulted as the annual theme is determined, and each should contribute through its programs.

The theme should be inaugurated each fall through the DEHNR exhibit at the State Fair and should be observed for the following twelve month period. Theme selection should be completed by January of each year, or ten months in advance.

Schedule: Theme selection for the 1990 State Fair exhibit and for educational activity through 1991 should begin immediately.

Key Actors: Line division directors should participate in selection of a theme, with final decision by the Secretary. The State Fair Coordinator should continue to work with division personnel to orchestrate exhibit design and construction. The Office of Environmental Education should assist divisions to plan educational activities consistent with the theme.

Cost Estimate: No additional resources will be needed to implement this recommendation.

IX. **The Department of Environment, Health, and Natural Resources should establish an Awards for Excellence program to recognize outstanding performance each year in areas of environmental education.**

Comments: The Environmental Education Awards for Excellence program should enhance the prestige of those who have made outstanding contributions each year. Strong credibility can be achieved by careful selection of a limited number of honorees, by significant ceremony, and by the involvement of political and

civic leaders. The Secretary should appoint a planning committee to propose program design and implementation.

Schedule: The planning committee should be appointed immediately and complete its report by July 1, 1990. The first awards should be made in the fall of 1990.

Key Actors: The initial responsibility for this program will lie with members of the planning committee. Eventually the management of this program should be vested in the Office of Environmental Education.

Cost Estimate: The costs associated with an annual awards banquet should not exceed $10,000. Funding from private sources is recommended.

X. **The Department of Environment, Health, and Natural Resources should seek a long-term funding base for environmental education programs. An option deserving serious consideration would dedicate the proceeds of all civil penalties collected through regulatory programs to environmental education.**

Comments: Currently there are several divisions within the Department that levy civil penalties for violations of environmental laws. With the exception of fines levied by the Division of Land Resources, all fines revert to the General Fund. Legislation should be drafted and introduced to designate these fines for environmental education. Often violations occur because individuals are not familiar with environmental restrictions or because they do not understand why restrictions

are necessary and important. Enforcement is expensive, and well designed environmental education programs could reduce noncompliance by heightening the public's awareness of and appreciation for the environment.

Penalties deposited to the environmental education fund should be distributed from the Department to meritorious projects through a grant system. Collections should not inure to the direct benefit of DEHNR, and the grant decisions should be made by the Department Secretary on the advice of a panel that includes representation from the environmental regulatory commissions, the community of classroom teachers, environmental organizations, the business community, and the general public.

Schedule: Action to implement this recommendation should begin immediately. Efforts to develop background information and draft legislation should begin as soon as the environmental education report is finished. The bill should be introduced in the 1991 session of the General Assembly.

Key Actors: Secretary Cobey's office, appropriate division directors, the Legislative Liaison, the Office of General Counsel, legislative leaders, and the Governor should all be involved in this recommendation. Key citizens and constituent groups should be solicited for input and support.

Cost Estimate: No additional resources should be required to implement this recommendation.

XI. **The Department of Environment, Health, and Natural Resources should install an Education Specialist position in each of the line divisions.**

Comments: The line divisions have been and will continue to be the major providers of environmental education services. Their participation in the Department's environmental education initiative will not be significant or sustained unless each has at least one full-time position dedicated to that effort. This truth is confirmed by the history of such divisions as the Wildlife Commission, Forest Resources, and the Zoological Park.

In those divisions currently without education specialists, staff resources can be acquired by (1) restructuring the job responsibilities of existing staff (2) converting a vacant position or (3) adding staff through the expansion budget process. The Team has made no attempt to determine which of these options is most appropriate in individual cases; nor has the Team determined which divisions have the most pressing need. These determinations should be made within the planning/budgeting process under the direction of the Assistant Secretaries and incorporated in the environmental education program plans submitted as the FY 1991-93 budget request is prepared.

Schedule: Environmental education specialists should be placed in line divisions not now having such positions beginning July 1, 1991.

Key Actors: The principal actors are the line division directors, who must choose among staffing options. Support and encouragement must be provided by the Secretary with help from

the Deputy and Assistant Secretaries and the Office of Fiscal Management.

Cost Estimate: No estimate of resource requirements can be made until evaluations are completed by division directors. Costs associated with the creation of a new position can be expected to range from $40,000 to $60,000.

ENVIRONMENTAL EDUCATION IMPLEMENTATION SCHEDULE

I EHNR CONSERVATION ETHIC

II EHNR/DPI PARTNERSHIP

III OFFICE OF ENVIRONMENTAL EDUCATION

IV EHNR TEACHER TRAINING PROGRAM

V ENVIRONMENTAL EDUCATION CENTERS

VI EHNR BUDGET/PLANNING PROCESS

VII EHNR PROGRAM FOR GENERAL AUDIENCES

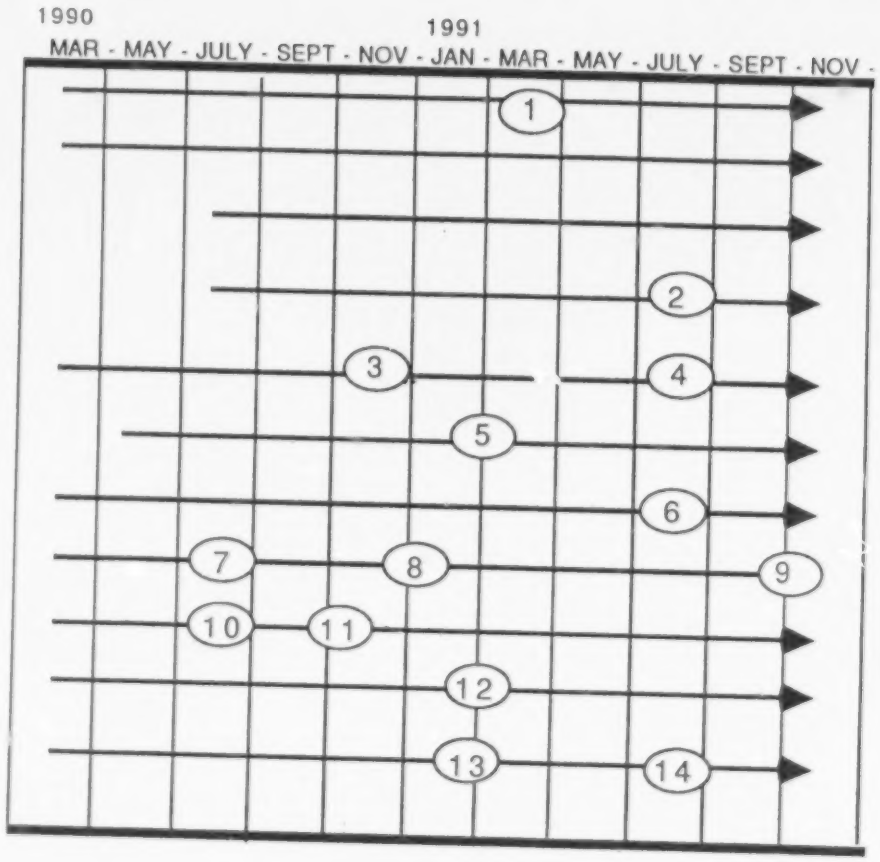
VIII EHNR ANNUAL THEME

IX AWARDS FOR EXCELLENCE

X LONG TERM FUNDING SOURCE

XI EDUCATION SPECIALISTS FOR DIVISIONS

◯ = MILESTONES



1. Complete Environmental Audit
2. Complete Needs Assessment
3. Design Phase Complete
4. Building Phase
5. Budget introduced to General Assembly
6. First Program Available
7. 1992 Theme Selection Process Begins.
8. 1991 Theme Introduced at State Fair
9. 1992 Theme Introduced at State Fair
10 Planning Committee Completes Work
11 Awards Banquet
12 Legislation Introduced
13 Budget Introduced
14 Education Specialist Positions Funded

ENVIRONMENTAL EDUCATION
COST ESTIMATES

I.	EHNR CONSERVATION ETHIC	$ 15,000.00
II.	EHNR/DPI PARTNERSHIP	-0-
III.	EHNR OFFICE OF ENVIRONMENTAL EDUCATION	$175,000.00
IV.	TEACHER TRAINING	$500,000.00
V.	ENVIRONMENTAL EDUCATION CENTERS	$3,860,000.00
VI.	EHNR BUDGET/PLANNING PROCESS	-0-
VII.	EHNR PROGRAM FOR GENERAL AUDIENCES	$ 12,000.00
VIII.	EHNR ANNUAL THEME	-0-
IX.	AWARDS FOR EXCELLENCE	$ 10,000.00
X.	LONG TERM FUNDING SOURCE	-0-
XI.	EDUCATION SPECIALISTS FOR DIVISIONS ($40-$60,000 per division)	

ENVIRONMENTAL EDUCATION
COST ESTIMATES

I.	EHNR CONSERVATION ETHIC	$ 15,000.00
II.	EHNR/DPI PARTNERSHIP	-0-
III.	EHNR OFFICE OF ENVIRONMENTAL EDUCATION	$175,000.00
IV.	TEACHER TRAINING	$500,000.00
V.	ENVIRONMENTAL EDUCATION CENTERS	$3,860,000.00
VI.	EHNR BUDGET/PLANNING PROCESS	-0-
VII.	EHNR PROGRAM FOR GENERAL AUDIENCES	$ 12,000.00
VIII.	EHNR ANNUAL THEME	-0-
IX.	AWARDS FOR EXCELLENCE	$ 10,000.00
X.	LONG TERM FUNDING SOURCE	-0-
XI.	EDUCATION SPECIALISTS FOR DIVISIONS ($40-$60,000 per division)	